

REMARKS/ARGUMENTS

The Official Action has been carefully considered and the Examiner's comments are duly noted. Reconsideration of this Application in the light of the Amendments for the specification, the Claims and the Argument submitted is respectfully solicited.

With respect to paragraph 1 and the formal objections raised to claims 21 to 24 as being of improper dependent form for failure to further limit the subject matter of the previous claims, Applicant considers the intended use to be a limitation. The intended use has been recited in the preamble of the claim. Also, claims 21 to 23 now have their subject matter included in amended claim 24.

Turning now to paragraphs 2 to 4, in which claims 18 to 31 and 35 were rejected under 35 U.S.C. 102(b) as being anticipated by Cavazos U.S. Patent 5,167,688 in view of Kostura, et al., U.S. Patent 4,072,181. Applicants have respectfully considered the Examiner's statements regarding Cavazos, as well as Kostura, et al. The Examiner clearly has carefully noted that Cavazos fails to teach a second conduit. The Examiner has brought in Kostura, et al. ostensibly or for the specific purpose to show a second conduit. However, the present invention, in addition to distinguishing structurally, also distinguishes in operation and results achieved, and this is not the only distinction, and, therefore, patentability is not being relied upon solely on this basis.

It is respectfully noted that neither Cavazos alone nor Kostura, et al. alone teach all of the elements and teach the limitations as set forth in each of the independent claims. Further, while the Examiner considers that Kostura, et al. shows two separate conduits, Applicant does not respectfully agree with this. Kostura, et al. just shows one continuous flow path all of the same dimension schematically as shown in the drawings and as disclosed in the specification. Applicant does not consider that Kostura, et al. show two separate individual conduits as contended by the Examiner.

The Examiner's attention is respectfully directed to lines 20 to 25 of column 2, of Kostura, et al. wherein the specification refers to "composite conduit" 151 which means a single conduit. The next sentence refers to "the conduit" (in the singular, not the plural)

which must mean the composite conduit 151 as including a pair of channels 11 . . . which are joined at opposite ends to supply conduit portion 14 and a collection conduit portion 12. If separate conduits were intended, it is rather doubtful that the term “portion” as a qualifier would be used and rather doubtful that conduit 151 would be defined as a “composite” conduit, or referred to in the singular. The Examiner cannot twist the wording of Kostura, et al. like a nose of wax to achieve his wording rather than the writing in Kostura, et al.

Therefore, the Examiner’s combination does not meet the terms of the claims and Kostura et al. does not modify Cavazos to arrive at Applicant’s claimed invention.

It is further noted that no combination of Cavazos and Kostura, et al., regardless of how combined, teach the combination of elements as now set forth in the amended claims and newly filed claims.

Specifically, while Kostura, et al. may teach a second conduit, as the Examiner proposes or contends, and with which Applicant specifically disagrees, it also teaches the feed of the so-called second conduit by the pump 40. Some of the claims, as now amended, further distinguish from Kostura, et al. by referring to a second conduit (the first conduit or first passageway in the claims) which is fed by gravity and flows by gravity into the chamber containing the liquid within the mold. No pump is required. It may very well be that the Examiner is equating passageway 14 as a chamber within the mold but that is not that the actual situation. For the present purposes of this invention, a conduit is not a chamber and vice-versa. It is necessary that the wording of the art be used as Applicant has used them. For the sake of accuracy, it is noted that the claims refer to “first conduit” as a limitation and it is this particular “first conduit” or first passageway that the Examiner is citing in Kostura, et al. Looking at the drawing of Kostura, et al., it should be noted that pump 40 feeds or forces the liquid 60 through (composite) conduit 151. It does not flow freely without a pump by gravity. There is no suggestion nor teaching anywhere in Kostura, et al. of flow by gravity. There is neither teaching nor suggestion that that composite conduit 151 has any communication with the upper level

of vapor contained in the chamber containing the liquid as set forth in the claims of this Application. If there is a vapor, it is in the single conduit of Kostura, et al. What the Examiner is referring to as conduit 151 and extends above the liquid level reservoir 60 is a single conduit, and it is argued by the Examiner as being the vapor container.

Note, lines 39 to 42 of column 2 of Kostura, et al. regarding the purpose of the pump 40. In the present claimed invention, no pump is mentioned nor required as noted heretofore, and the feed takes place by gravity feed. The only complete closed chamber is the condenser 20 but that has nothing to do with the molding chamber. There is no liquid in the molding chamber, but the Examiner is using Cavazos for this, and both Cavazos and Kostura, et al. only use a single continuous conduit. Clearly, therefore, Kostura cannot be used to modify Cavazos as the Examiner implies.

Turning now to the matter of the gaseous phase which is discussed in column 3, first paragraph, but there is no teaching that this gaseous full phased takes place from the upper portion of the closed molding chamber which is a limitation of all of the claims.

A consideration of the newly cited prior art, Kostura's, et al. patent, as best understood, describes a complicated device for regulating the temperature of a coolant which is then pumped through channels in a mould, not gravity fed or rising in the vapor stage. Note, some of the claims include this specific limitation, as now amended (25, 26, 28, 29, 30).

The only similarity to the present invention (if there is one) is that it claims to utilize the vapor pressure of the coolant and therefore expects some heat removal from the mould to occur from boiling of the coolant.

The technique for measuring the temperature of the coolant and responding to that measurement has very serious flaws which make it quite unreliable.

Since the removal of air from the system is not specified, it must be assumed and argument is made that the condenser will contain a mixture of air and vapour from the fluid. Such contamination will render invalid the correlation between the measured

pressure and the coolant temperature. All of the independent claims are amended to set forth that air is substantially removed therefrom.

The heat has to be removed from the system (an obviously necessary function). Therefore, the cooling conduit (25) must be maintained at a lower temperature than the coolant. This means, as best understood, that the pressure of the vapour adjacent to this conduit will be at a lower level than the vapour adjacent to the surface of the pool of coolant at the bottom of the condenser. Thus there is a pressure gradient through the condenser chamber and the vapour will flow from the higher pressure area to the lower pressure area. The readings from the pressure transducer will be affected by the position at which the measurement is made and by the venturi effects of the flow.

According to the teachings of Kostura, et al., this disclosure or teaching appears to believe that by reducing the pressure in the condenser, the temperature of the body of coolant will be automatically and instantaneously reduced. No recognition appears to be given to the fact that a reduction in temperature can only be achieved by the commensurate removal of heat which is totally dependent on the rate of flow of vapour to the condenser and the condenser's ability to deal with it.

Temperature control, according to the present invention, is achieved by monitoring the temperature of the mould adjacent to the cavity, a totally reliable and accurate method.

Note Kostura's device is dependent on the coolant being pumped through the mould; therefore, it is inevitable that significant pressure gradients will be generated through the coolant circuit with coinciding gradients in boiling points and hence in temperatures. This is another reason that the teachings of Kostura fail to achieve its objectives. In any event, the Examiner is respectfully asked to note that the claims provide for the return by gravity and no pump is required. Both a structural and operating distinction is therefore provided.

The inclusion of a safety valve (24) in the circuit indicates that pressures exceeding atmospheric are expected to be used, with ethyl glycol being the preferred coolant.

Note: Kostura, et al. makes no attempt to provide for uniform temperature distribution throughout the mould. Kostura, et al. does not have the same problems as Cavazos with blind bores, yet Kostura, et al. does have the same restrictions imposed by straight channels. Therefore, Kostura does not meet the limitation of uniform temperature.

By shaping the "cooling chamber" to follow the shape of the moulding surfaces, the present invention ensures that the distribution of temperature across the moulding surfaces is as uniform as possible.

The surfaces of the cooling chamber of the present invention are maintained at a uniform temperature by using the phase change properties of a fluid. The cooling chamber is structured so that the distances from all points on the moulding surfaces to the surface of the cooling chamber are as equal as possible. This ensures that the temperature differentials between those points and the cooling chamber are as equal as possible.

Consequently, a highly uniform temperature profile is achieved across the moulding surfaces.

In addition, there are a number of points which neither Cavazos nor Kostura, et al., taken either singly or combined in any valid combinations, disclose or suggest.

With respect to Kostura, et al. in conclusion, while the Examiner appears to refer to this as showing two conduits, it is respectfully submitted that what is shown by Kostura is a single conduit flow path 151 as noted above. The very fact that the same conduit goes through the wall of the mold clearly indicates that Kostura is using a single conduit and not two conduits. This is the reason that pump 40 is necessary so as to assure that the liquid flows at the lower portion and continues to force the volatile portion at the top where the vapor is to enter into the heat exchanger. In Applicant's claimed invention, the chamber is not a conduit but an area for supplying liquid and an area for removing

vapor from the top of the liquid. This is not shown, nor suggested, nor taught by any combination of Cavazos or Kostura, et al.

If any fees are needed, please charge them to our Deposit Account 50-3108.

If there are any points outstanding, the Examiner is respectfully asked to call Applicant's attorney to do what is necessary to place the Application into condition for allowance.

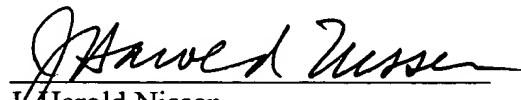
Please take this as a request for a two-months term extension to render this Application timely filed, and our check in the amount of \$225.00, small entity, is enclosed. Also, there is a new independent claim, and, while the claim quantity remains the same, our check for the new independent claim in the amount of \$100.00 (small entity), is enclosed.

It should also be noted that the inventor has not read all of the subject matter in the response because of sickness in the family, and these answers and arguments are being submitted on the basis of previous instructions received, as best understood.

Early and favorable action is respectfully solicited.

Respectfully submitted,

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Enclosure: Check for \$225.00 for Two Months Extension
Check for \$100.00 for Independent Claim (small entity)